

BEFORE THE  
PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA  
DOCKET NO. 2004-357 W/S

REBUTTAL TESTIMONY

OF

PAULINE M. AHERN, CRRA  
VICE PRESIDENT  
AUS CONSULTANTS - UTILITY SERVICES

ON BEHALF OF

CAROLINA WATER SERVICE, INC.

CONCERNING

FAIR RATE OF RETURN

APRIL 2005

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1 I. PURPOSE

2  
3 Q. Please state your name, occupation and business address.

4  
5 A. My name is Pauline M. Ahern and I am a Vice President of AUS Consultants  
6 - Utility Services. My business address is 155 Gaither Drive, P.O. Box 1050,  
7 Moorestown, New Jersey 08057.

8  
9 Q. Are you the same Pauline M. Ahern who previously submitted direct  
10 testimony in this proceeding?

11  
12 A. Yes, I am.

13  
14 Q. What is the purpose of this testimony?

15  
16 A. The purpose of this testimony is to rebut certain aspects of the direct  
17 testimony of the South Carolina Office of Regulatory Staff Witness Ben  
18 Johnson concerning various aspects of his recommended common equity  
19 cost rate ranges for Carolina Water Service, Inc. (CWS or the Company).

20  
21 II. SUMMARY

22  
23 Q. Please briefly summarize your rebuttal testimony.

1  
2 A. My testimony will address the theoretical problems associated with Dr.  
3 Johnson's exclusive reliance upon historical data in arriving at his  
4 recommended common equity cost rate ranges. Such exclusive reliance  
5 upon historical data is inconsistent with both the prospective nature of cost of  
6 capital analysis and the ratemaking paradigm as well as inconsistent with the  
7 Efficient Market Hypothesis (EMH). Moreover, exclusive reliance upon  
8 historical information is also inconsistent with the cost of common equity  
9 analysis adopted in Docket No. 2000-0207-W/W, CWS' previous rate case. In  
10 addition my testimony will address the problems associated with Dr.  
11 Johnson's applications of the Comparable Earnings Model (CEM)<sup>1</sup> and the  
12 Discounted Cash Flow (DCF) Model.

13  
14 III. THEORETICAL CONCERNS

15  
16 Q. Please comment upon the theoretical problems surrounding Dr. Johnson's  
17 exclusive reliance upon historical data in his application of both the CEM  
18 and DCF.

19  
20 A. The theoretical problems of exclusive reliance upon historical data to derive  
21 ranges of recommended common equity cost rates are centered on the  
22 prospective natures of both the ratemaking paradigm and the cost of common

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<sup>1</sup> Dr. Johnson uses the term Comparable Earning Analysis.

1 equity. Ratemaking is prospective since rates set in this or any base rate  
2 regulatory proceeding are intended to be in effect and collected during a  
3 future period of time. The cost of capital, including the cost of common  
4 equity, is also prospective, in that it measures the rate of return required by  
5 investors in the capital marketplace so that they will invest in a firm's  
6 securities. The market prices paid by investors reflect their expectations for  
7 the future regarding, but not limited to, interest rate expectations, inflation  
8 expectations, earnings expectations, dividend expectations, risk, etc. In  
9 addition, the standards established in the Hope<sup>2</sup> and Bluefield<sup>3</sup> decisions  
10 cited in my direct testimony at page 6, line 40 through page 7, line 2 are clear  
11 that it is the future level of earnings which needs to be sufficient in order to  
12 maintain the integrity of presently invested capital and permit the future  
13 attraction of needed new capital at a reasonable cost in competition with  
14 other comparable-risk firms. Hence, the exclusive reliance upon historical  
15 information by any analyst who is attempting to emulate investor behavior,  
16 especially within the ratemaking paradigm, is inconsistent with the  
17 prospective natures of both the ratemaking paradigm and the cost of capital.

18  
19 Q. Please comment upon how Dr. Johnson's exclusive reliance upon historical  
20 data in his application of both the CEM and DCF is inconsistent with the  
21 EMH.

22  

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<sup>2</sup> Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

<sup>3</sup> Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

1 A. As discussed in my direct testimony, on pages 17 through 19, the EMH is the  
2 foundation of modern investment theory. An efficient market is one in which  
3 current security prices reflect all relevant information all the time, implying that  
4 prices adjust instantaneously to new information. In this way, current prices  
5 reflect the intrinsic fundamental economic value of a security and investors'  
6 expectations surrounding that security. Conversely, this means that past  
7 security prices contain no relevant information concerning investor  
8 expectations.<sup>4</sup> As noted on page 18 of my direct testimony:

9 The essential components of the EMH are:

- 10  
11 A. Investors are rational and invest in assets  
12 providing the highest expected return given a  
13 particular level of risk.  
14  
15 B. Current market prices reflect all publicly available  
16 information.  
17  
18 C. Returns are independent - i.e., today's market  
19 returns are unrelated to yesterday's returns.  
20  
21 D. Capital markets follow a random walk - i.e., the  
22 probability distribution of expected returns  
23 approximates a normal distribution.  
24

25 In addition, as also discussed on pages 18 and 19 of my direct testimony, "all  
26 relevant and ascertainable information is already reflected in security prices".<sup>5</sup>

27 Hence, investors are aware of all publicly-available information, including, but

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<sup>4</sup> However, given the normalizing nature of the ratemaking paradigm and the volatile nature of capital markets, historical data, in conjunction with current and projected data, is typically analyzed in estimating the cost of capital, including the cost of common equity, within the rate base/rate of return paradigm.

<sup>5</sup> Brealey, R.A. and Myers, S.C., Principles of Corporate Finance, McGraw-Hill Publications, Inc., 1996, pp. 323-324.

1 not limited to, current market information regarding any specific security as  
2 well as management's expectations for the future and investment analysts'  
3 expectations for the future regarding any given security. Such current and  
4 prospective investment information is both widely and inexpensively  
5 (sometimes at no cost) available to investors in newspapers, magazines,  
6 through company Security and Exchange Commission (SEC) filings, through  
7 Value Line Investment Survey, on the Internet, etc. In view of the foregoing,  
8 in an attempt to emulate investor behavior, which all rate of return analysts  
9 do, including both Dr. Johnson and myself, it is incumbent upon the analyst to  
10 evaluate current and prospective market data. Therefore, Dr. Johnson's  
11 exclusive reliance upon historical data in his application of both the CEM and  
12 the DCF is incorrect.

13  
14 Q. Please comment upon how Dr. Johnson's exclusive reliance upon historical  
15 data in his application of both the CEM and DCF is inconsistent with the  
16 Commission's findings in Docket No. 2000-0207-W/S.

17  
18 A. In Order No. 2001-887, the Commission authorized CWS a return on  
19 common equity of 11.50%. This common equity cost rate was based upon  
20 the application of the DCF, the Risk Premium Model (RPM) and the Capital  
21 Asset Pricing Model (CAPM) utilizing historical data, available at the time,  
22 current market data at the time and projected data. Clearly then, Dr.  
23 Johnson's exclusive reliance upon historical data in his application of the

1 CEM and the DCF is inconsistent with the analysis forming the basis of the  
2 Commission's findings in the Company's last rate case. In addition, Dr.  
3 Johnson's utilization of only the CEM and DCF is inconsistent with the  
4 inclusion of the RPM and CAPM in the analysis supporting the common  
5 equity cost rate recommendation adopted in Docket No. 2000-0204-W/S.  
6

7 IV. COMPARABLE EARNINGS MODEL (CEM)  
8

9 Q. Please comment upon Dr. Johnson's application of the Comparable  
10 Earnings Model.

11  
12 A. Although I agree with Dr. Johnson's comments on page 9, line 8 through  
13 14, regarding the need to use a "sufficiently broad data base . . . to avoid  
14 circular reasoning" and to minimize "any bias inherent in the data" by  
15 focusing "on the earnings of unregulated firms" in a comparable earnings  
16 approach, I disagree with both his exclusive reliance upon historical data  
17 for reasons discussed above and his analysis of the risk of public utilities,  
18 specifically water utilities, vis-à-vis the companies he relied upon in his  
19 comparable earnings analysis.

20 Although public utilities, and water companies, in general are of less  
21 investment risk than unregulated companies, Dr. Johnson has not provided  
22 any evidence of investors' collective perception of these risk differences  
23 because he has not relied upon any market data relevant to such a risk  
24 analysis. While he provides a thorough qualitative discussion of the risk



1 differences between unregulated companies, public utilities and water  
2 companies, he does not provide any empirical, quantitative analysis to  
3 support a reduction of 200 to 250 basis points (2.0% to 2.5%) to his range  
4 of comparable earnings results of 11.5% to 13.0% for unregulated firms to  
5 derive a range of comparable earnings results of 9.5% to 10.5% for water  
6 utilities.

7 In contrast, my application of the CEM is both market-based and  
8 prospective, consistent with the prospective nature of both ratemaking and  
9 the cost of capital as well as consistent with the EMH as discussed above.  
10 My application of the CEM is market-based because the process of  
11 selecting the comparable risk non-regulated companies is based upon  
12 statistics which result from regression analyses of market prices which  
13 under the EMH reflect all relevant risks. This selection process also  
14 insures that the group of non-regulated companies is indeed comparable in  
15 risk to the average company in each of my proxy groups of water  
16 companies. Therefore, it is not necessary to make a qualitative judgment  
17 of the difference in returns between non-regulated companies and water  
18 utilities, i.e. because the non-regulated companies selected through this  
19 process are comparable in risk. Therefore, their returns can be used  
20 directly as the comparable earnings based cost of common equity for the  
21 two proxy groups of water companies.

22 In addition, and in contrast to Dr. Johnson, I have utilized both  
23 historically achieved returns on book common equity and projected returns

1 on book common equity. These returns are from Value Line Investment  
2 Survey, which is both investor influencing and readily and inexpensively (or  
3 freely) available to investors. Thus, because my comparable earnings  
4 analysis is consistent with the prospective nature of both the ratemaking  
5 paradigm and the cost of capital, as well as consistent with the EMH, the  
6 results of my comparable earnings analysis, which range from 14.4% to  
7 14.5% (see Exhibit No. \_\_\_\_, Schedule PMA-12, pages 2 and 4), and not  
8 Dr. Johnson's, should be relied upon by the Commission in determining an  
9 authorized overall rate of return on rate base, including a rate of return on  
10 common equity.

#### 11 12 V. DISCOUNTED CASH FLOW (DCF) MODEL

13  
14 Q. Please comment upon Dr. Johnson's application of the Discounted Cash  
15 Flow Model.

16  
17 A. On page 22, at lines 17 through 19, of his direct testimony, Dr. Johnson  
18 states that his range of DCF returns is approximately 8.5% to 9.8%, based  
19 upon a dividend yield range of 3.0% to 3.3% and a range of growth from  
20 5.5% to 6.5%. Once again, Dr. Johnson has based his conclusions  
21 exclusively upon historical data and out-of-date data at that, i.e. through  
22 2003, although he notes that his dividend yield range is consistent with  
23 dividend yields during the first few months of 2005. As discussed above,

1 such reliance upon historical data is inconsistent with the prospective  
2 natures of ratemaking paradigm and the cost of capital, as well as  
3 inconsistent with the EMH and investor expectations.

4 While I do not agree with the manner in which he derived a dividend  
5 yield range of 3.0% to 3.3%, I do agree that it is reasonable and consistent  
6 with recent average dividend yields for my two proxy groups of water  
7 companies, which range from 3.0% to 3.2% as shown on Exhibit No. \_\_\_\_,  
8 Schedule PMA-6, Column 1. However, on a going forward basis, Dr.  
9 Johnson's dividend yield range is understated because he is using his  
10 judgment of current dividend yields while the DCF model calls for expected  
11 dividend yields. As discussed in my direct testimony, at page 29, lines 17  
12 through 26, an adjustment to the dividend yield must be made in order to  
13 reflect the expected dividend yield. Since the various companies in both of  
14 our proxy groups increase their quarterly dividend at various times during  
15 the year, a reasonable assumption is to reflect one-half the annual dividend  
16 growth rate. This is a conservative approach which does not overstate the  
17 dividend yield which should be representative of the next twelve-month  
18 period. Hence, Dr. Johnson's dividend yield range correctly adjusted for  
19 growth would be 3.1% to 3.4%<sup>6</sup>. Such an adjusted dividend yield range is  
20 consistent with the average adjusted dividend range shown in Column 3 on  
21 Schedule PMA-6 of Exhibit No. \_\_\_\_, i.e., 3.1% to 3.3%.

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<sup>6</sup>  $(3.1\% = (3.0\% * (1 + (5.5\%/2))))$  and  $(3.4\% = (3.3\% * (1 + (6.5\%/2))))$ .

1                   However, I do not agree with Dr. Johnson's recommended growth  
2                   rate range of 5.5% to 6.5%.

3  
4       Q.       Why do you not agree with Dr. Johnson's recommended growth rate range  
5                   of 5.5% to 6.5%?

6  
7       A.       As with both his comparable earnings analysis and his conclusion of a  
8                   range of dividend yields, Dr. Johnson has once again relied exclusively  
9                   upon historical and/or out-of-date growth rates, even while acknowledging  
10                  in lines 19 and 20 on page 26 of his direct testimony that "it is investor  
11                  *expectations* about the future, not past results, that are most relevant in  
12                  developing a DCF analysis." The low end of his range of growth rates,  
13                  5.5%, is somewhat lower, but consistent with the low end of the average  
14                  growth rates based upon both historical and projected growth rates, shown  
15                  in Column 4 on the top half of Schedule PMA-6 of Exhibit No. \_\_\_\_.  
16                  However, average growth rates for my two proxy groups of water  
17                  companies, based upon analysts' forecasts of growth in earnings per share  
18                  (EPS), range from 7.7% to 8.0%, as shown in Column 4 on the bottom half  
19                  of Schedule PMA-6 of Exhibit No. \_\_\_\_.

20                Substituting the low end of the range of growth rates shown in  
21                Column 4 of Schedule PMA-6, i.e., 5.7%, and the high end of the growth  
22                rates also shown in Column 4, i.e., 8.0%, because these growth rates are  
23                more correctly based upon more current historical, as well as forecasted

1 data, results in a growth rate range of 5.7% to 8.0%. Using this growth rate  
2 range and correctly adjusting Dr. Johnson's range of dividend yield, 3.0%  
3 to 3.3%, to be representative of the next twelve-month period, results in an  
4 adjusted dividend yield range of 3.1% to 3.4%<sup>7</sup> and a DCF based return on  
5 common equity range of 8.8% to 11.4%.<sup>8</sup>

6 Finally, factoring up this range of DCF based common equity cost  
7 rates for Dr. Johnson's recommended cost of issuing stock of 4.0% (see  
8 Dr. Johnson's direct testimony, page 27, line 11) results in a range of DCF  
9 returns of 9.2% to 11.9%.<sup>9</sup> And, adding his 60 basis points (0.6%)  
10 adjustment for "the relatively small size of the Company's service territory"  
11 (see Dr. Johnson's direct testimony, page 27, line 15), results in an  
12 adjusted and corrected range of DCF results of 9.8% to 12.5%<sup>10</sup> which  
13 more appropriately applies to CWS than Dr. Johnson's recommended DCF  
14 range of 9.5% to 10.8%.

## 15 16 VI. CONCLUSION

17  
18 Q. What are your conclusions based upon your review of Dr. Johnson's direct  
19 testimony and resulting recommended ranges of common equity?  
20

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<sup>7</sup>  $(3.1\% = (3.0\% * (1 + (5.7\%/2))) \text{ and } 3.4\% = (3.3\% * (1 + (8.0\%/2))))$ .

<sup>8</sup>  $(8.8\% = 3.1\% + 5.7\%) \text{ and } (11.4\% = 3.4\% + 8.0\%)$ .

<sup>9</sup>  $(9.2\% = 8.8\% * 1.04) \text{ and } (11.9\% = 11.4\% * 1.04)$ .

<sup>10</sup>  $(9.8\% = 9.2\% + 0.6\%) \text{ and } (12.5\% = 11.95 + 0.6\%)$ .

1 A. As discussed above, Dr. Johnson's recommended ranges of common equity  
2 are erroneously and exclusively based upon historical data, which is  
3 inconsistent with the prospective nature of ratemaking and the concept of the  
4 cost of capital, including the cost of common equity. Such exclusive reliance  
5 upon historical and sometimes out-of-date data is also inconsistent with the  
6 EMH, as discussed above. Consequently, a more appropriate range of  
7 comparable earnings results is 14.4% to 14.5%, based upon my application  
8 of the CEM to proxy groups of non-regulated companies which are truly  
9 comparable in risk to water companies and which utilizes prospective as well  
10 as historical returns. In addition, a more appropriate range of DCF results as  
11 derived above would be 9.8% to 12.5%, based upon correctly adjusting the  
12 range of dividend yields for the expected growth in dividends over the next  
13 twelve months as well as a more appropriate range of growth rate based  
14 upon more current historical and projected growth rates.

15  
16 Q. Does that conclude your rebuttal testimony?

17  
18 A. Yes.